

fibers by the series of physical obstacles which it places in their pathway. If the hypothesis be true, and be correctly applied to the conditions actually present in the tamrac pine, a right-hand leaf-spiral, as shown in the diagram, should give a left-hand fiber-twist; and conversely, a left-hand leaf-spiral should give a right-hand fiber-twist. This discussion therefore adds a second question for the prospective explorer in this field, namely: Are these hypothetical results borne out by the results of actual observation? An affirmative answer here, following an affirmative answer to the first question, would be an important step toward confirming the theory here suggested.

If the line of experiment here suggested does not at once consign this theory to the limbo where all its predecessors have gone, there is still left an enormous field of investigation to be covered before what may be established for this particular tree or for this particular leaf-pattern can be applied to exogenous tree-growth in general.<sup>1</sup> Science, as well Art, is long indeed—and Life alas is short for either!

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## FIELD NOTES ON ERICACEAE OF THE TAHOE REGION

VIOLA B. BAIRD

The field covered by these notes I have explored quite thoroughly during five consecutive summers. It includes both banks of the Truckee River from Lake Tahoe to Bear Creek, the valleys of Bear Creek and Squaw Creek, with the uplands between the sources of these two streams and Five Lakes Creek. The altitude ranges between 6100 feet at the mouth of Squaw Creek to 7540 feet at the Five Lakes. Within this area is a great variety of situations and conditions: alpine meadows, swamps, barren cliffs, and forests of fir and pine. It is hoped that these notes may prove to be some slight contribution to the general knowledge of these interesting and lovely plants.

1. *Pyrola asarifolia*. In colonies, where a streamlet flows through a growth of willows or alders. It has a large round basal leaf, and flowers which in odor and appearance resemble those of the lily-of-the-valley, save that the corolla is tipped with rose. In bloom from middle to late July. Found on both sides of the Truckee River from the Lake to Deer Park station.

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<sup>1</sup>Since the above was placed in the editor's hands, my attention has been called to a note in the *American Breeder's Magazine*, vol. 1, p. 262, to the effect that experiments with seedlings of *Pinus ponderosa* show "a decided twist of fibers from the time of germination," that is, before there could be any physical obstacles to determine its direction. And I also had recalled the remarkable cabling of the great roots of *Sequoia gigantea*, where the same thing would be true.

2. *Pyrola secunda*. A small plant forming colonies in situations not unlike those of No. 1, but a little more in the open. Corolla greenish-white, blooming in July. Found on the trail between the Lake and the Ramparts, and along the upper course of Squaw Creek.

3. *Pyrola minor*. In moist places. Plant smaller throughout than *P. secunda*; corolla greenish-white. In bud August 5th. Found in one place only, on the shores of the Five Lakes.

4. *Pyrola picta*. Dry woods. Easily known by its dark-green basal leaves with white veins. Flower-stalk about six inches high. Flowers pale, sometimes tinged with red, blooming in early August. In woods about the Tavern, and on the trail as far as Deer Park station.

5. *Pyrola pallida*. Often found growing with *P. picta*, and like it in appearance, save that it is pale throughout, and its leaves lack the white veining. It blooms late in July.

6. *Chimaphila umbellata*. Here and there in dry woods, often associated with Nos. 4 and 5. A beautiful plant about five inches high. Corolla pale pink, waxy, and very fragrant. Late July.

7. *Chimaphila menziesii*. In dry woods, forming colonies. A bit larger than *C. umbellata*, with which it is often associated. Corolla deep pink, waxy, and not fragrant. Blooms in early August. There is a fine bed of it on the trail between the Ramparts and Lake Tahoe.

8. *Sarcodes sanguinea*. Snow-plant. A saprophyte with thick fleshy stem, bright red throughout. Found in great abundance during the first half of July on the trail from the Lake to Deer Park and on the ridge above.

9. *Pterospora andromeda*. Pine Drops. A saprophyte with naked reddish-brown stalk, rising from one to four feet high among low underbrush. In late July. Here and there between the Lake and Mat Green's.

10. *Pleurocospora fimbriolata*. In dry woods. Has a thick stem about six inches high, bearing a dense cluster of flowers. A saprophyte; whitish throughout. Two specimens only were found blooming in July on the ridge above the trail between Deer Park and the Lake.

11. *Kalmia polifolia* var. *microphylla*. Pale American Laurel. In swampy ground. A shrub about six inches high, poisonous to cattle. Corolla lavender, very attractive. In bloom on the north side of Squaw Meadow early in July.

12. *Ledum glandulosum*. Labrador Tea. In moist or swampy ground. A shrub about four feet high, with showy clusters of white

flowers blooming on the north side of Squaw Meadow late in July, and on the shores of the Five Lakes in August.

13. *Bryanthus breweri*. American Heather. On exposed rocky slopes at high altitudes. A low spreading shrub with needle-like leaves and dark rose-colored corolla. The beauty of a slope of it in full bloom is like nothing else that I know. In bloom on the shores of the Five Lakes late in July.

14. *Arctostaphylos nevadensis*. Dwarf Mazanita. At high altitudes on level ground. A low creeping shrub forming extensive mats, and blossoming as soon as the snow leaves the ground. Flowers pale pink, in clusters. Abundant about the Five Lakes.

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### CALENDAR OF MEETINGS

*September 18, 1915.*—Regular meeting at the Oakland Public Museum. Dr. Jepson being absent for the year, Prof. P. B. Kennedy was elected president. Miss M. Alice King described her success in growing native plants in her home garden. Mr. Guy Smith discussed the need of an education extending beyond books to all the factors which make up the environment of the child, and the culture to be secured by the study of plant-life.

*October 16, 1915.*—The speakers were as follows: Prof. R. W. Stevens, "The Possibilities in the use of Berry-bearing Plants in Gardens and Parks"; Mr. W. S. Gould, "Growing Native Shrubs in the Oakland Parks"; Miss May Sellender, "How Berries and Berry-bearing Plants may be used in House Decoration."

*November 20, 1915.*—Prof. Walter Mulford gave an illustrated lecture on "City and County Forests for California," showing the excellent results secured by a careful system of forest-production carried on by cities and counties elsewhere, especially in Switzerland.

*January 22, 1916.*—Professor Kennedy spoke of the great importance and advantage to agriculture of a life-history herbarium of all our common plants, both indigenous and introduced, in order that they may be easily recognized in all their stages of growth. After discussion it was decided to ask the members of the Society to co-operate in building up such a herbarium. There followed an illustrated lecture by the president on the Kew Gardens and their vicinity.

*March 11, 1916.*—Prof. H. M. Hall gave a talk, illustrated by maps and herbarium specimens, on "Plant Life in the South Coast Ranges."